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SOME ALTIMETRIC SIGNATURES FROM SEASAT OVER THE MID-PACIFIC SEA--ETC(U)

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FOREWORD

Satellite altimetry yields information about sea surface topography. Seasat data along tracks in the mid-Pacific seamount range are investigated in this report. The correlation with published bathymetric charts is discussed, and corrections to the bathymetric chart are indicated.

Released by:

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CONTENTS

	<u>Page</u>
ALTIMETRIC SIGNATURES	1
CONCLUSION	1
DISTRIBUTION	

ALTIMETRIC SIGNATURES

The high-pass filtered Seasat altimetry data in the mid-Pacific seamount range presented herein consist of altimetry averaged over 500 pulses, which yields a sample every 3.32 km along the ground tracks. These data were passed through a high-pass filter. Its frequency response function is indicated in Figure 1. The half amplitude lies at a wavelength of 200 km.

The output of the filter has been plotted along the ground tracks on a Mercator grid (Figure 2) and is suitable for overlay on a bathymetric chart¹, which is reproduced in Figure 3. Overlaying the charts reveals that the following "seamount signatures" do not correlate with the reference bathymetry:

1. Revolution 1164 and its repeat tracks: 12° 55'N 174° 8'W
2. Revolution 131: 13° 56'N 175° 15'W
3. Revolution 619: 14° 17'N 175° 28'W

The other "seamount signatures" correlate with features in the bathymetric chart.

CONCLUSION

One may conclude that there are either some uncharted seamounts in this region or that some seamounts on the bathymetric chart have been misplaced.

¹*Bathymetric Atlas of the North Pacific Ocean*, N. O. Pub. No. 1301-2-3, 1973.

FIGURE CAPTIONS

Figure 1. Frequency Response Curve of Digital Filter:

λ = Wavelength in km

$\omega = 2 \pi / \lambda$

Figure 2. Band of 18 High-Pass Filtered Altimetry Tracks on a Mercator Grid:

Half Amplitude of Filter = 200 km

1m Corresponds to 1° Longitude

Positive Values to the Left

Some Editing Has Been Done to Remove Poor Data

Figure 3. Bathymetric Chart in the Region of the Mid-Pacific Seamounts
(Page 1803N in Reference 1)

FREQUENCY RESPONSE FUNCTION

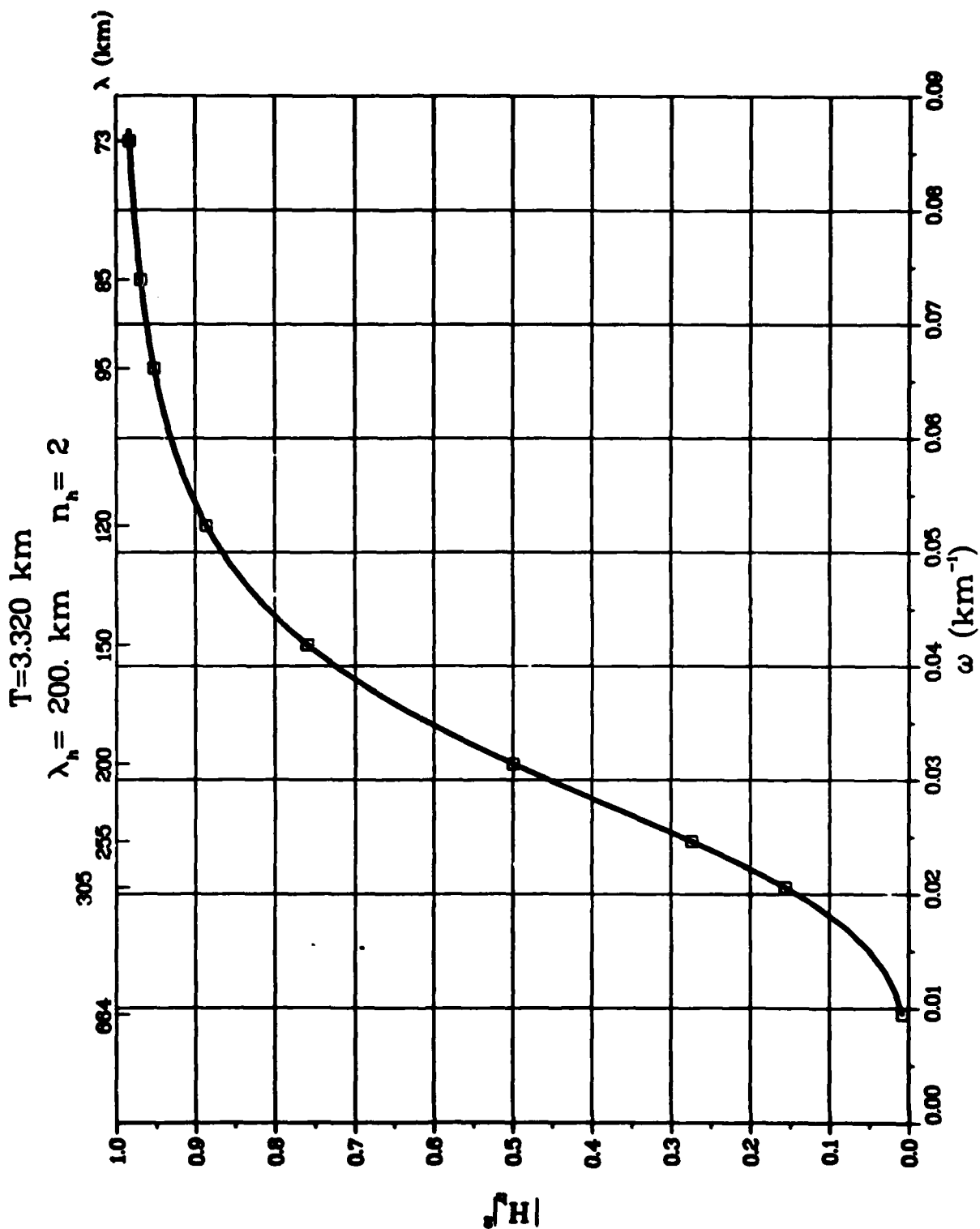


Figure 1

ZONDEK RAW HEIGHT
 N=2 L=200KM REVS131.174.217.418.461.533.576.619.662.777.1035.1164,
 1207.1250.1293.1336.1379.1422.1465

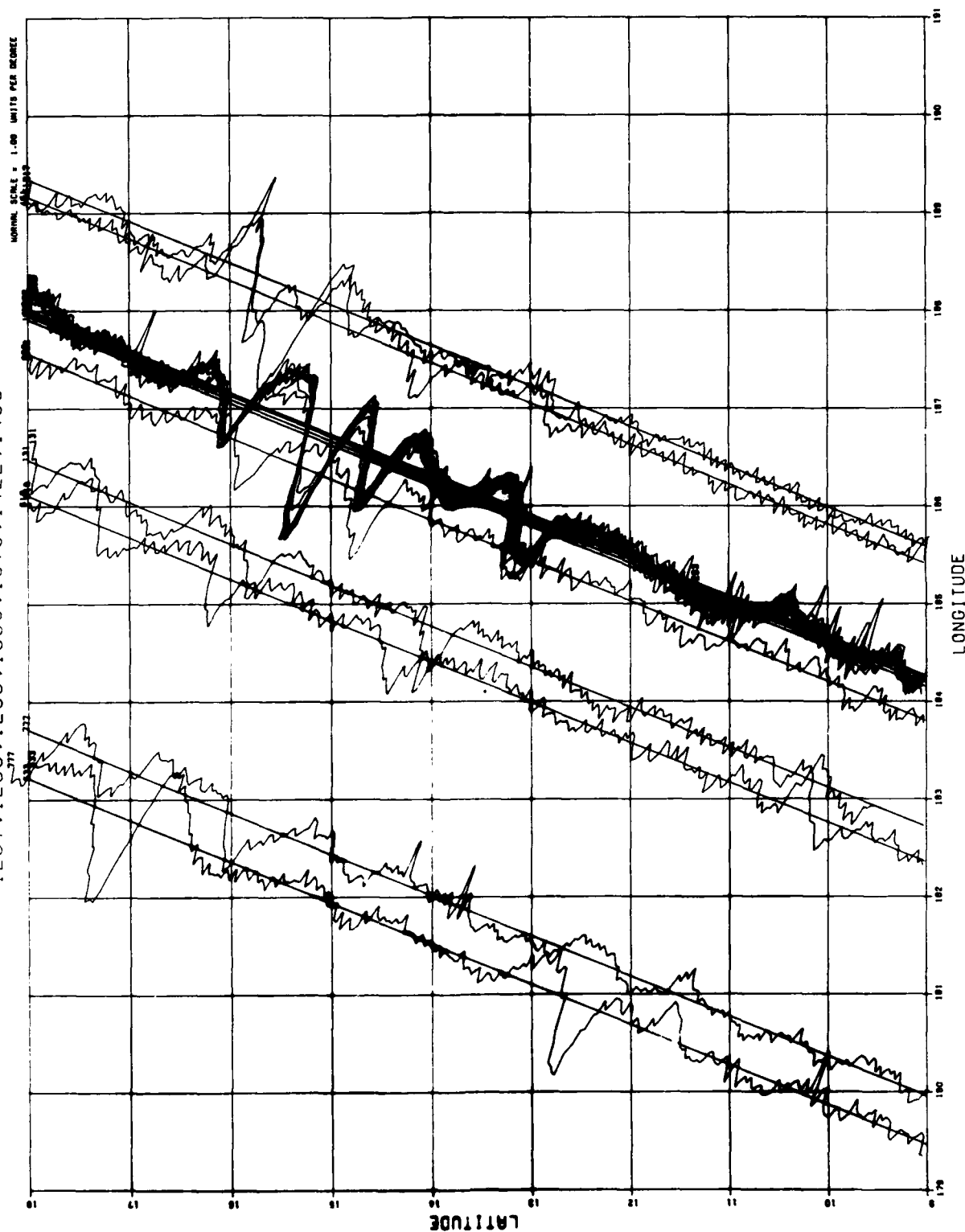


Figure 2

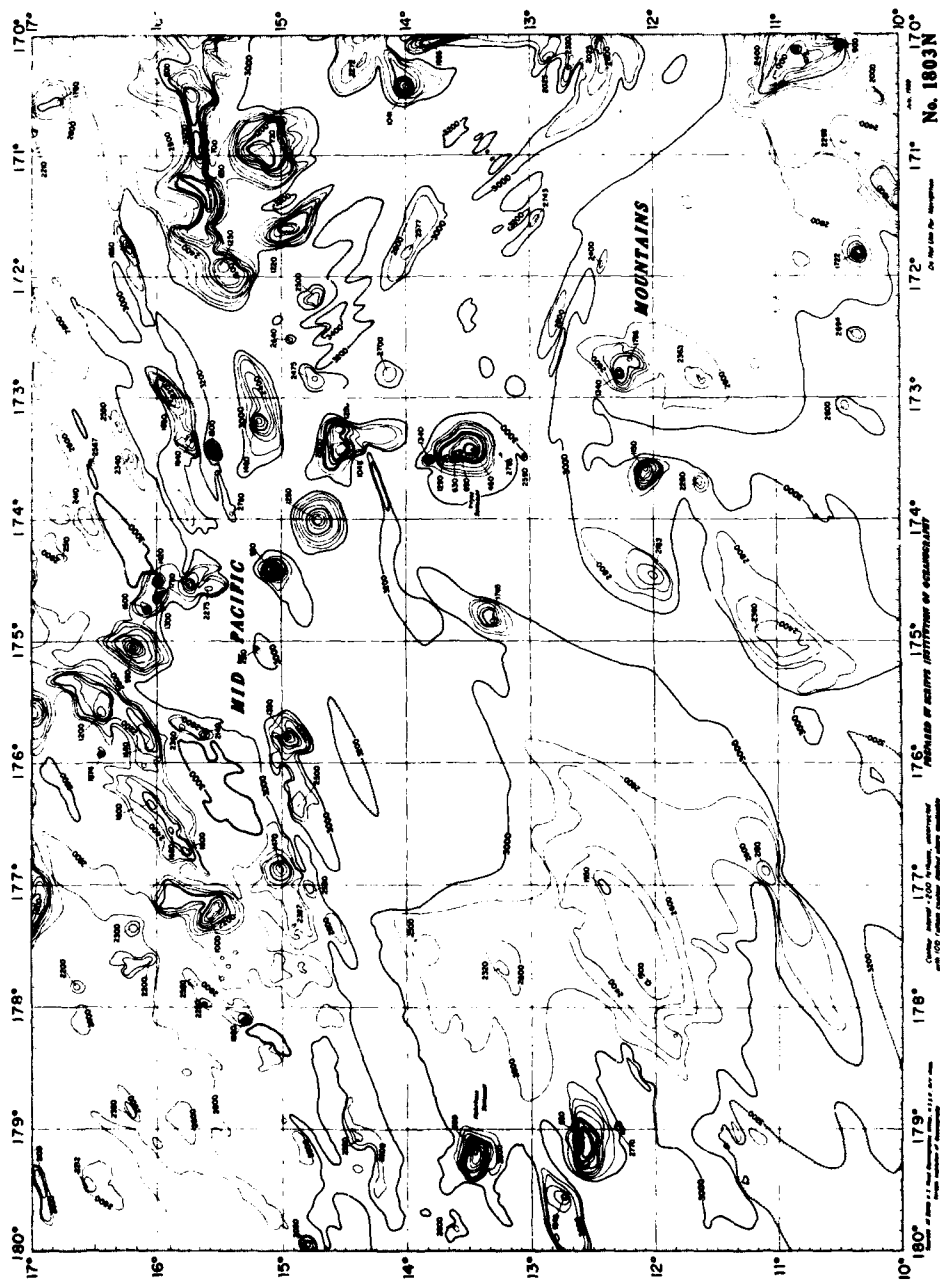


Figure 3

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